37732/C/1

MORTON, Thomas and CADGE, William
The surgical anatomy of the principal regions of the human body. Pt. 4.

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ENGRAVINGS

ILLUSTRATING

THE SURGICAL ANATOMY

OF THE

HEAD AND NECK, AXILLA, BEND OF THE ELBOW, AND WRIST,

WITH DESCRIPTIONS.

BY THOMAS MORTON,

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LONDON:

PRINTED FOR TAYLOR AND WALTON,

BOOKSELLERS AND PUBLISHERS TO UNIVERSITY COLLEGE,

28, UPPER GOWER STREET.

1845.

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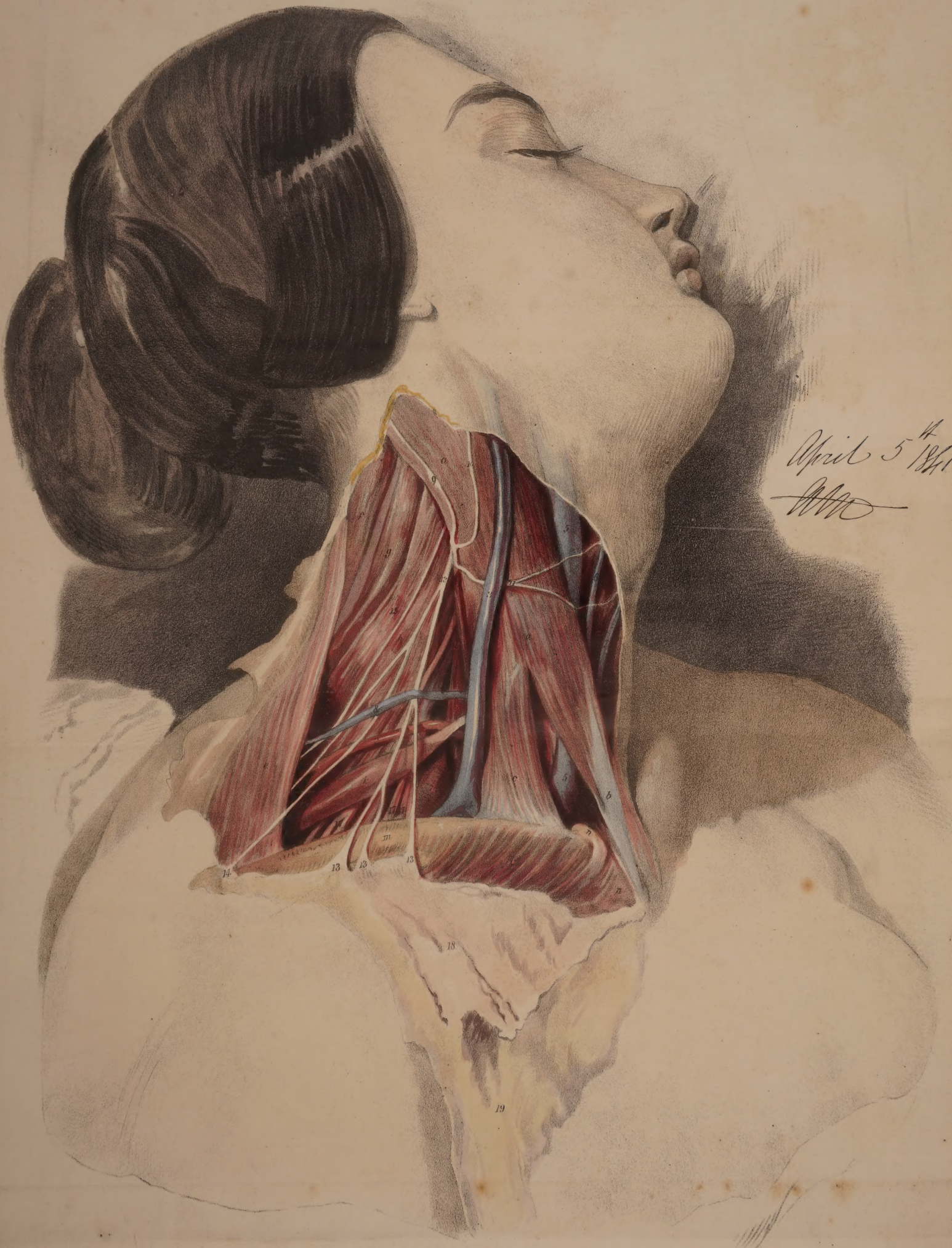
LONDON:
Printed by S. & J. Bentley, Wilson, and Fley,
Bangor House, Shoe Lane.

The Publication of the Commentary, which, it was intended, should have accompanied this part of the work, is unavoidably delayed for the present. It is expected, however, to be ready by October 1845.

With the exception of Plate IV., which is copied from Arnold's "Treatise on the Nerves of the Head," the following Engravings have been executed after original Drawings made from Dissections of the parts represented.

Upper Gower Street,
February 1845.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EXPLANATION OF PLATE I.

SURGICAL DISSECTION OF THE POSTERIOR TRIANGLE OF THE NECK.

In making the dissection which is necessary to expose the subclavian artery in the latter part of its course, the skin should be raised with care, in order that the fibres of the platysma myoides, which cover the interval between the sterno-mastoid and trapezius muscles, may be preserved. They pursue an oblique course, on the side of the neck, as they ascend from the region of the mamma to their insertion into the lower part of the face.

Underneath the platysma myoides will be found the external jugular vein and superficial descending branches of the cervical plexus.

The cervical fascia is next to be examined. It extends from the sterno-mastoid to the trapezius, both of which muscles it invests; and, inferiorly, is inserted into the superior border of the clavicle. The external jugular vein, as it descends to join the subclavian vein, pierces the fascia a little above the clavicle.

A quantity of loose cellular tissue which lies under the cervical fascia is to be removed, and the posterior belly of the omo-hyoideus sought for. This muscle is invested by a deep process of the cervical fascia, which binds it down in its place, and also covers the subclavian artery and brachial plexus of nerves.

---

a. a. The sterno-mastoid muscle in the middle of the neck. *b.* The tendon of the muscle, which attaches it to the anterior part of the sternum. *c.* The clavicular portion of the muscle.

d. The sterno-hyoid muscle.

e. The inner edge of the trapezius muscle, where its fibres turn forwards to their attachment to the upper edge of acromial third of the clavicle.

f. The upper extremity of the splenius colli muscle.

g. Part of the levator anguli scapulæ muscle.

h. The scalenus posticus muscle.

i. The scalenus anticus muscle, lying deeply underneath the sterno-mastoid muscle. The phrenic nerve (16) runs obliquely across its anterior surface. It is also crossed by the transverse artery (2) and vein (8) of the neck. Lower down the subclavian vein (4) lies on its tendon, by which it is separated from the subclavian artery.

k. The posterior belly of the omo-hyoideus muscle.

l. The pectoralis major muscle, where it is attached to the clavicle.

m. The clavicle.

n. The sternal extremity of the same bone.

ARTERIES.

1. The subclavian artery in the third part of its course, where it rests upon the first rib.

The brachial plexus (17, 17) is situated on its upper and outer aspect, and the subclavian vein (4) lies between it and the clavicle.

2. The transverse artery of the neck. This vessel is a branch of the thyroid axis, and passes over the scalenus anticus muscle (*i*) and phrenic nerve (16) in its course across the lower part of the neck. In many subjects the place of this artery is supplied by a large branch from the third part of the subclavian,—a distribution which might influence the success of an operation in which a ligature had been placed on the latter vessel.

VEINS.

3. The external jugular vein.

4. Part of the subclavian vein, seen obscurely behind the clavicle.

5. 5. The anterior jugular vein, which was very large in the subject from which the drawing was taken.

6. 7. Smaller veins descending from the neighbourhood of the os hyoides to join with the anterior jugular. They were placed between the cervical fascia and the sterno-hyoid muscle.

8. The transverse vein of the neck.

NERVES.

9. The occipitalis minor nerve.

10. The auricularis magnus nerve.

11. The cervicalis superficialis nerve.

12. The descending branches of the cervical plexus.

13. 13. 13. Supra-clavicular branches of the preceding.

14. 14. Supra-acromial branches of the same.

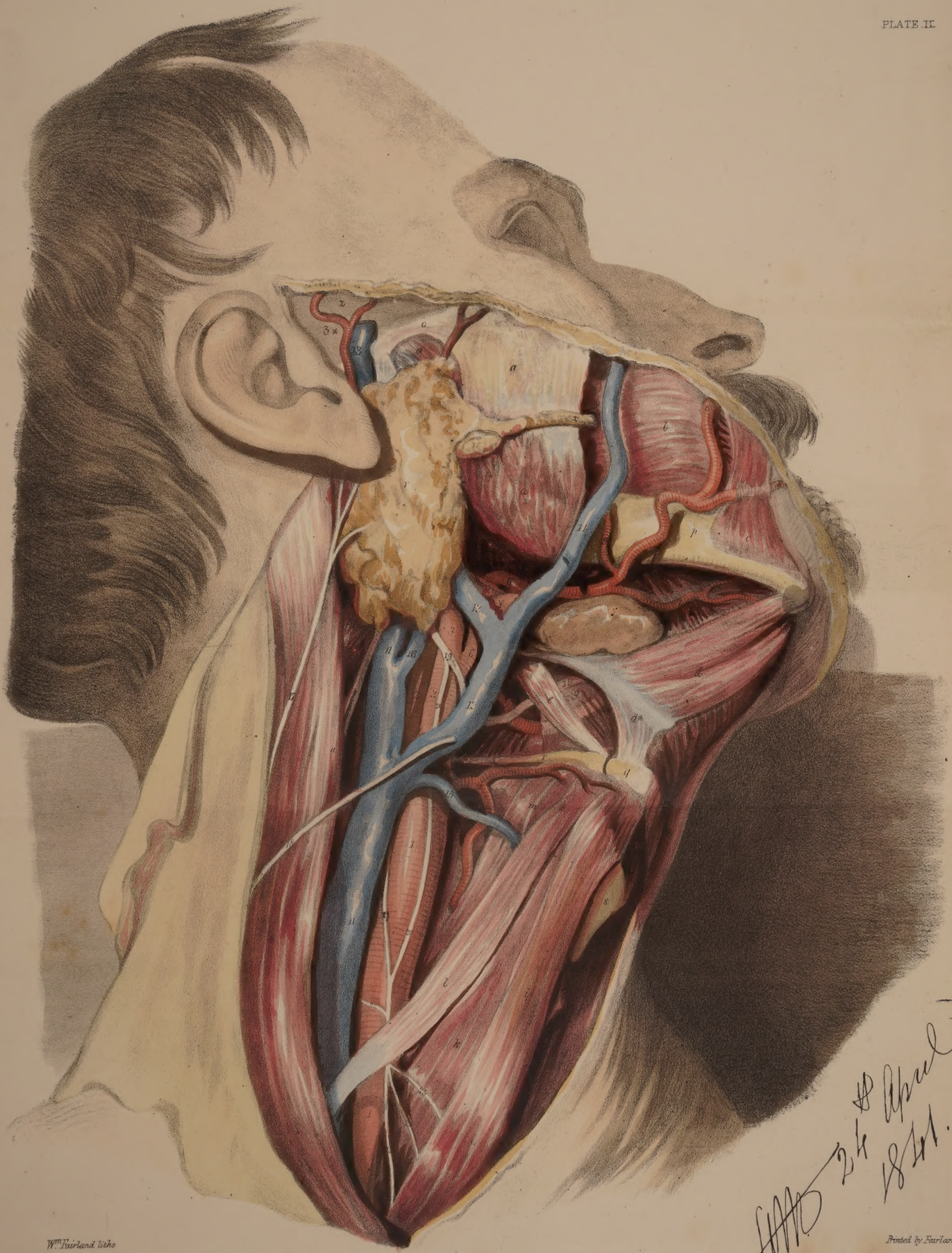
15. The spinal accessory nerve.

16. The phrenic nerve, lying deeply upon the scalenus anticus muscle.

17. 17. 17. Branches of the brachial plexus of nerves ; they are situated close to the posterior and upper border of the subclavian artery, in the third part of its course.

18. The cervical fascia and platysma thrown down upon the chest, exposing the clavicular portion of the pectoralis major muscle.

19. The integuments of the lower part of the neck, reflected in a similar manner.



24th April 1841.

Wm. Fairland litho

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London, Taylor & Walton, Upper Gower Street.

EXPLANATION OF PLATE II.

SURGICAL DISSECTION OF THE ANTERIOR TRIANGLE OF THE NECK.

To expose the great vessels of the neck, the integuments and platysma myoides, with the cervical fascia, must be removed, and the muscles dissected as is represented in the drawing. The sterno-mastoid muscle should be drawn outwards, and the sterno-hyoid, sterno-thyroid, and omo-hyoid muscles in the opposite direction, so that the common carotid artery and great jugular vein may be seen in the lower part of the neck.

The attachments of the cervical fascia to the mastoid and zygomatic processes of the temporal bone, the base of the lower jaw, and the os hyoides are deserving of particular attention ; for, until these have been severed, the muscles and vessels of the neck are much more closely approximated to each other than they afterwards appear.

---

a. a. a. The masseter muscle.

b. The buccinator muscle. Its fibres are pierced by the duct of the parotid gland (*x*) nearly opposite the second molar tooth of the upper-jaw.

c. The depressor anguli oris.

d. d. The digastric muscle.

*d**. The fibrous expansion from the tendon of the digastric muscle by which it is fixed to the os hyoides.

e. The stylo-hyoideus muscle.

f. f. The mylo-hyoideus muscle.

g. The hyo-glossus muscle. The ninth, or hypo-glossal nerve (19) lies upon its outer surface, and under it is placed the lingual artery.

h. The pharynx.

i. The sterno-hyoid muscle.

k. The sterno-thyroid muscle.

l. The anterior belly of the omo-hyoid muscle. The tendon of the muscle is seen on the large vessels, which it crosses in the lower third of the neck.

These muscles receive several small nerves from the plexus formed between the descendens noni (20) and two small branches of the cervical nerves (21, 22).

m. Part of the thyro-hyoid muscle.

n. The sterno-mastoid muscle. The inner border of the muscle has been freely drawn outwards in order that the great vessels, which it naturally conceals in the lower part of the neck, might be exposed to view.

o. The zygomatic arch.

p. The base of the lower jaw bone, between the depressor anguli oris and masseter muscles.

q. The body of the os hyoides.

r. The great cornu of the os hyoides.

s. The pomum Adami, or prominence formed by the anterior and superior surfaces of the thyroid cartilage.

t. The cricoid cartilage.
u. The thyro-hyoid membrane.
v. The parotid gland.
w. The socia parotidis.
x. The duct of the parotid gland.
y. *y*. The submaxillary gland.
z. The temporal fascia.

ARTERIES.

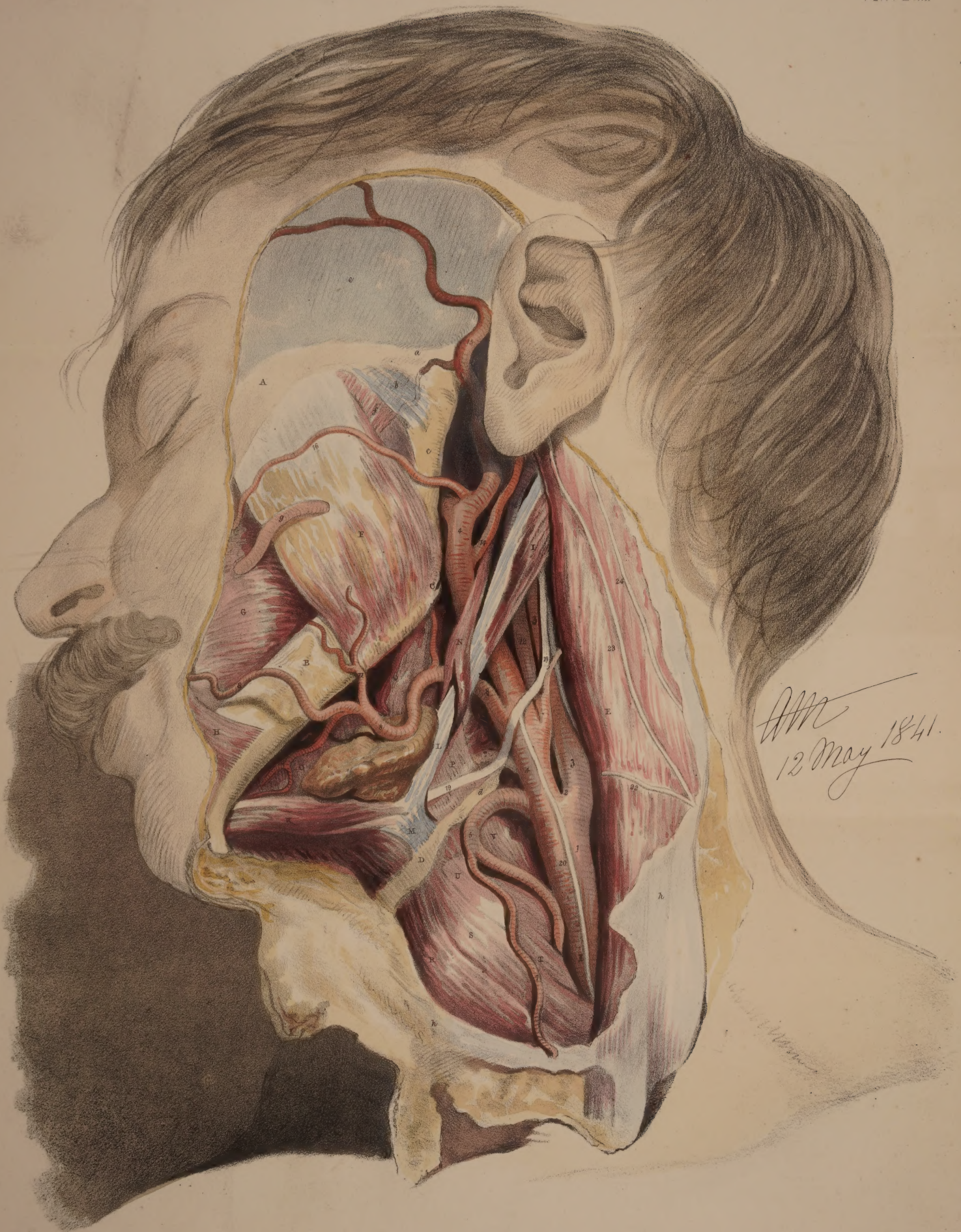
1. 1. The common carotid artery.
2. The internal carotid artery.
3. 3. The external carotid artery.
3.* The temporal artery.
4. The superior thyroid artery.
5. The lingual artery.
6. 6. 6. The facial artery.
7. The submental artery, as it runs along the mylo-hyoideus muscle, under cover of the jaw.
8. The inferior labial artery.
9. A small branch which runs up along the anterior margin of the masseter muscle.
10. The tranverse artery of the face.

VEINS.

11. 11. The internal jugular vein.
B. The temporal vein.
12. A very large vein formed by the union of the temporal and facial veins ; it crosses over the external carotid artery to empty itself into the internal jugular.
13. The vein formed by the union in the parotid gland of the temporal and internal maxillary veins.
14. The facial vein. This vessel commences at the inner angle of the eye by a very small branch, the angular vein, that anastomoses with the ophthalmic vein.
15. The superior thyroid vein.
16. The pharyngeal vein.

NERVES.

17. The auricularis magnus nerve.
18. The superficial cervical nerve.
19. 19. The lingual or hypo-glossal nerve. It crosses the external carotid artery, and as it does so furnishes
20. 20. The descendens noni, which in the lower part of the neck forms a plexus by joining with two filaments of the cervical nerves.
21. 22. Two delicate branches of the cervical plexus which unite, upon the sheath of the carotid artery, with the descendens noni.
23. 24. 25. Small branches distributed to the sterno-hyoid, sterno-thyroid, and omo-hyoid muscles.
26. The spinal accessory nerve.



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EXPLANATION OF PLATE III.

SURGICAL DISSECTION OF THE BLOOD VESSELS WHICH LIE NEAR THE ANGLE OF THE JAW.

In this dissection, the parotid gland is to be removed piecemeal, with the portio dura nerve, so as to expose the external carotid artery and several of its principal branches. The veins may also be taken away.

A. The malar bone.

a. The root of the zygoma.

b. Part of the capsular ligament of the lower jaw.

B. The base of the lower jaw. The facial artery is easily compressed in this situation, as it turns over the bone, in front of the masseter muscle.

C. The angle of the jaw.

c. The neck of the condyle of the same bone.

D. The body of the os hyoides.

d. The greater cornu of the same bone.

e. The temporal fascia.

E. The sterno-mastoid muscle, which has been drawn outwards to display the common carotid artery.

F. The masseter muscle.

f. Some fibres of it which descend obliquely forwards from the zygoma to be inserted into the coronoid process.

G. The buccinator muscle.

g. The duct of the parotid gland, piercing the fibres of the buccinator.

H. Part of the depressor anguli oris muscle.

I. The posterior belly of the digastric muscle.

K. The anterior belly of the same.

L. The tendon of the digastric muscle.

M. The process of the cervical fascia which binds the tendon of the digastric to the os hyoides.

N. The stylo-hyoideus muscle, the fibres of which are pierced by the tendon of the digastric.

O. O. The mylo-hyoid muscle.

P. The hyo-glossus muscle.

Q. Q. Q. The superior constrictor of the pharynx.

R. The sterno-hyoid muscle.

S. Part of the omo-hyoid muscle.

T. Part of the sterno-thyroid muscle.

W. The thyro-hyoid muscle.

V. Middle constrictor of the pharynx.

h. h. The fascia of the neck which has been detached from the lower jaw and zygomatic arch, and turned downwards on the lower part of the neck.

ARTERIES.

1. The trunk of the common carotid artery, as it lies superficially in the anterior triangle of the neck.

2. The division of the common carotid into the external and internal carotid arteries. The vessel here presents a dilated appearance.

3. 3. The internal carotid artery.

4. 4. The external carotid artery.

5. The superior thyroid artery.

6. Marks the point where the artery turns beneath the sterno-thyroid muscle to reach the thyroid gland.

7. A superficial branch of the superior thyroid artery.

7.* The lingual artery.

8. 8. 8. The facial artery.

9. The inferior palatine artery.

10. The submental artery.

11. A small branch of the facial artery which runs upwards on the anterior margin of the masseter muscle.

12. 12. The posterior occipital artery.

13. Sterno-mastoid branch of the external carotid artery.

14. The posterior auricular artery.

15. 15. The temporal artery.

16. The transverse artery of the face.

17. The anterior temporal artery.

18. The internal maxillary artery, passing, deeply, behind the neck of the condyle of the lower jaw.

NERVES.

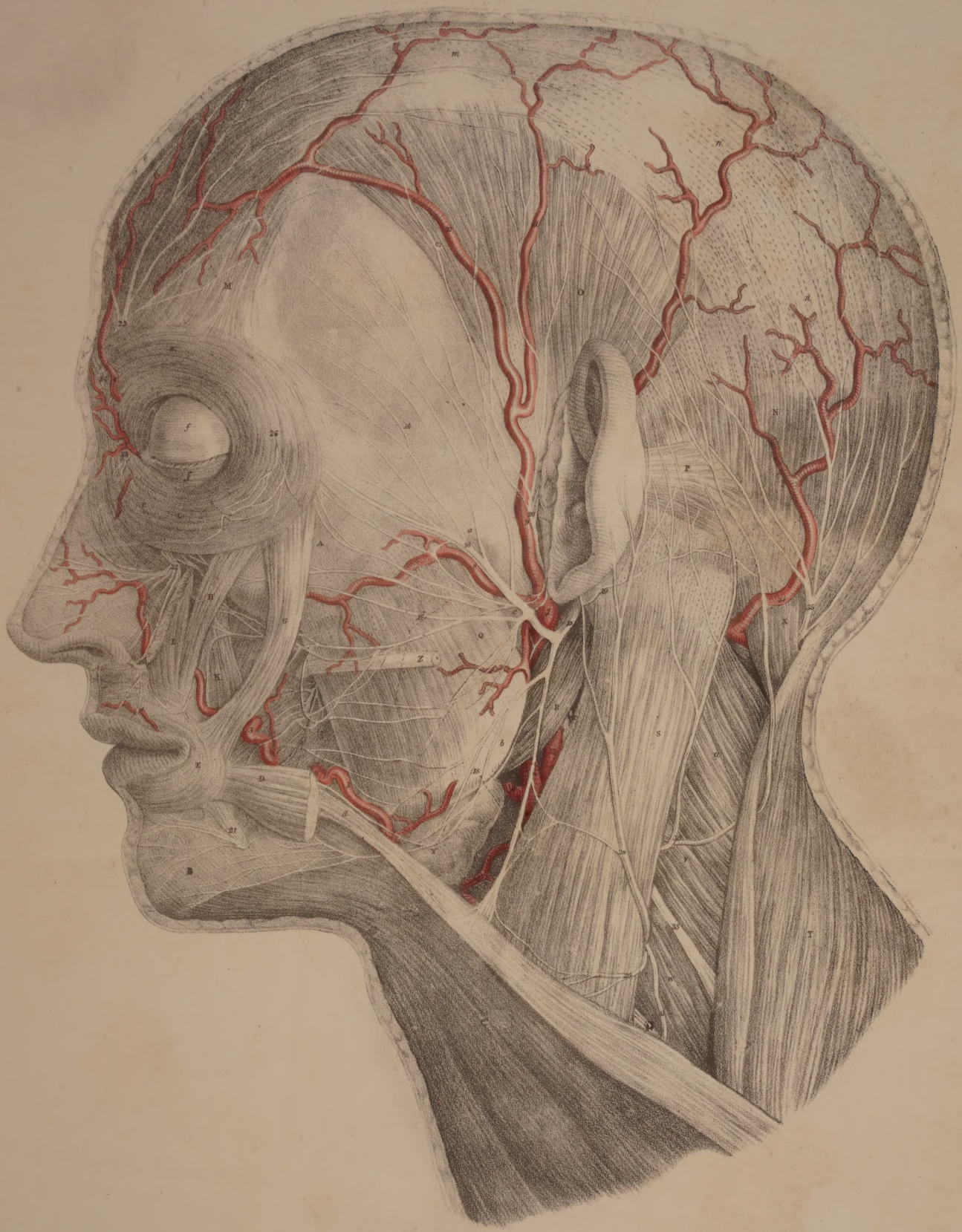
19. 19. The lingual or hypo-glossal nerve.

20. The descendens noni.

21. 21. The par vagum, lying behind and to the outer side of the carotid artery.

22. Part of the superficial cervical nerve.

23. 24. The auricularis magnus nerve.



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EXPLANATION OF PLATE IV.

DISSECTION OF THE SUPERFICIAL NERVES OF THE HEAD AND FACE.

This plate is taken from Arnold's* work on the nerves of the head.

The integuments and subcutaneous adipose tissue have been removed, as well as the parotid gland. The levator labii superioris muscle has been cut in order to show the second division of the fifth nerve as it issues from the infra-orbital canal. The quadratus menti muscle has also been removed to show the mental branch of the third division of the same nerve, as it escapes from the foramen mentale of the lower jaw, to be distributed to the structures which compose the lower lip.

A. The malar bone. *a.* The root of the zygomatic process of the temporal bone.

B. The lower jaw. *b.* The angle of the jaw. *c.* The neck of the condyle of the same bone.

C. The platysma myoides muscle. *d.* That process of it which is sometimes named m. risorius Santorini.

D. The depressor anguli oris, detached from its origin.

E. The orbicularis oris muscle.

F. The buccinator muscle.

G. The zygomaticus major muscle.

H. The zygomaticus minor muscle.

I. The levator labii superioris muscle, which has been cut partly away to show the infra-orbital nerve (22), which lies beneath it.

K. The levator anguli oris muscle.

L. The orbicularis palpebrarum muscle.

e. e. The external fibres of the muscle.

f. f. The innermost fibres which—more delicate than the others—cover the cartilages of the eyelids.

M. Anterior fibres of the occipito-frontalis muscle.

N. Posterior fibres of the same muscle.

m. n. n. Tendinous aponeurosis of the occipito-frontalis, sometimes called galea capitis.

O. The attollens aurem muscle.

P. The retrahens aurem muscle.

Q. The masseter muscle.

R. The posterior belly of the digastric muscle.

S. The superior half of the sterno-mastoid muscle.

T. Part of the trapezius muscle.

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* Frederici Arnoldi Icones Nervorum Capitis. Folio, Heidelbergæ, M.D.CCCXXXIV. Tabula nona.

U. Part of the splenius capitis muscle.
V. Part of the splenius colli muscle.
W. Part of the levator anguli scapulæ muscle.
X. Part of the complexus.
Z. Duct of the parotid gland, cut across.

ARTERIES.

1. 1. The external carotid artery, which is crossed by the digastric muscle (R), and portio dura nerve (15).
2. The superior thyroid artery.
3. 3. 3. The facial artery; this vessel springs from the external carotid near the angle of the jaw, and at first runs deeply in the submaxillary gland, covered by the lower border of the bone, after which it turns over its edge and runs in an oblique course across the side of the face to the angle of the eye, where it ends in a very small branch.
4. The superior coronary artery.
5. The nasal artery.
6. The frontal artery.
7. Nasal branches of the ophthalmic artery.
8. The transverse artery of the face, a branch of the temporal artery.
9. The temporal artery, ascending over the zygoma.
10. The anterior branch of the temporal artery.
11. A branch which ascends to the vertex.
12. The posterior temporal artery.
13. The internal carotid artery, lying deeply behind the angle of the jaw.
14. The occipital artery.

NERVES.

15. The trunk of the portio dura nerve, as it is issuing from the stylo-mastoid foramen to cross the external carotid artery.
16. 16. The temporal branches of the portio dura.
17. The dotted lines extending from this figure include the buccal or infra-orbital branches of the nerve. They supply the muscles of the middle part of the face, and join with the buccal and infra-orbital branches of the fifth nerve.
18. The figure and dotted line extending downwards from it, mark the cervico-facial branches of the portio dura.
19. The posterior auricular nerve.

BRANCHES OF THE FIFTH NERVE.

20. The auriculo-temporal nerve, a branch of the third division of the fifth nerve.

21. The mental branch of the inferior maxillary division of the fifth.

22. The infra-orbital nerve, which is the terminal branch of the superior maxillary or second division of the fifth.

23. The supra-orbital nerve.

24. The supra-trochlear nerve.

25. The infra-trochlear nerve.

26. Nervus subcutaneus malæ.

27. The buccal nerve.

SUPERFICAL BRANCHES OF THE CERVICAL PLEXUS.

28. The auricularis magnus nerve.

29. The superficialis cervicis nerve.

30. The occipitalis minor nerve, which, in the subject from which the drawing was made, divided into two large branches.

31. Cutaneous branch of the cervical plexus which is distributed to the integuments of the lower and front part of the neck.

32. The par vagnum or pneumo-gastric nerve, as it lies on the outer side of the internal carotid artery.

33. The spinal accessory nerve passing to the trapezius after having traversed the fibres of the sterno-mastoid muscle.

34. Supra-clavicular branches of the cervical plexus.

35. The great occipital nerve, or posterior branch of the second cervical nerve.

EXPLANATION OF PLATE V.

SURGICAL DISSECTION OF THE AXILLA.

As a preparatory step to the dissection of the axilla, the arm should be withdrawn from the body, and thrown over a large block of wood; as is represented in the drawing. An incision should then be carried along the lower border of the great pectoral muscle, extending from the ensiform cartilage of the sternum, to the insertion of the muscle into the outer edge of the bicipital groove of the humerus. Two other incisions should now be made, one from each end of the preceding cut; the first passing downwards and backwards, on the side of the chest, over the digitations of the external oblique muscle; the other, over the coraco-brachialis and biceps muscles, to the inner and back part of the arm. (See the Plate.)

At first the integuments only should be raised, and reflected upon the block supporting the shoulders of the subject. In doing this, a large number of very small follicular glands will be seen, occupying the inner surface of that part of the skin, which, externally, is covered with hair.

The fascia of the axilla is strongest, externally, where it blends itself with the aponeurosis of the arm. It extends across from the pectoralis major to the latissimus dorsi; and, inferiorly, is expanded over the obliquus externus.

Let the fascia be carefully opened, by dividing it as it leaves the border of the great pectoral muscle, and turn it downwards in the same manner as the skin.

A large quantity of loose cellular tissue, containing much fat and many lymphatic glands, is now to be removed; which must be done with great care, if the dissector would preserve the vessels and nerves which abound in this region.

The Axilla is a conical cavity, which extends upwards, behind the clavicle, into the lower part of the neck; internally, it is bounded by the ribs and serratus magnus muscle (*d. d. d.*); anteriorly, by the two pectoral muscles (*a. a.*); externally, by the shoulder-joint; posteriorly, by the subscapularis (*e*), teres major (*c*), and latissimus dorsi muscle (*b*); inferiorly, its base is formed by the fascia already spoken of.

The great vessels and nerves are placed at the upper and outer part of the region; but some large arteries run in the direction of each fold; for example, the external mammary (7) is found under the edge of the great pectoral muscle, and the subscapular (8) near the latissimus dorsi.

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a. a. The lower border of the great pectoral muscle, forming the anterior fold of the axilla.

b. b. The anterior border of the latissimus dorsi muscle, which, with the teres major muscle (*c*), forms the posterior fold.

c. Part of the teres major muscle.

d. d. d. d. d. The serratus magnus muscle, which arises by fleshy digitations from the first eight ribs and is inserted into the base of the scapula.

e. e. The subscapularis muscle.

f. The middle part of the coraco-brachialis muscle, which slightly overlaps the axillary artery in the lower part of its course.

g. The short head of the biceps flexor cubiti muscle.

h h. Part of the external oblique muscle of the abdomen.

i. i. The fascia of the arm which binds down the large vessels and nerves as they descend alongside of the coraco-brachialis and biceps muscles.

k. The fascia of the axilla, which, before the dissection was commenced, was stretched across the cavity included between the great pectoral and latissimus dorsi muscles, and concealed the vessels and nerves of the region.

l. l. Integuments of the axilla dissected from their connexions, and reflected in a similar manner.

ARTERIES AND VEINS.

1. The axillary artery in the lower part of its course. It rests at first upon the subscapularis muscle (*e*) near the shoulder-joint, and afterwards upon the tendons of the latissimus dorsi (*b*) and teres major (*c*) muscles.

2. The axillary vein. This large and important vessel covers the artery and plexus of nerves.

3. 4. The venæ comites of the brachial artery. They have been drawn a little downwards so as to expose the artery, which, naturally, they conceal.

5. The subscapular vein, which empties itself into the axillary vein.

6. A small artery, which, in this subject, took its origin from the axillary artery, underneath the pectoral muscle, and divided into two branches, one of which ran along the edge of that muscle to the mammary gland, while the other pursued an opposite course, towards the arm.

7. The long thoracic or external mammary artery. It usually runs along the lower border of the small pectoral muscle.

8. The subscapular artery. This vessel springs from the axillary artery near the articulation of the humerus with the scapula; it runs along the lower margin of the subscapular muscle as far as the inferior angle of the scapula, where it divides into many branches which are distributed to the serratus magnus, subscapularis, teres major, and latissimus dorsi muscles. Its principal branch, however, is the dorsal artery of the scapula; this turns backwards, passing round the lower edge of the subscapular muscle, to be distributed to the parts behind. It is seen in the drawing as the first branch of the artery.

There are other arteries in the axilla; some of which lie between the pectoral muscles—the thoracica acromialis and the thoracica suprema—and are not seen in this view of the region.

The posterior circumflex, a large artery, will be found close behind the neck of the humerus, between the subscapularis and latissimus dorsi muscles. Occasionally, however, it springs from the axillary artery lower down, below the tendons of the latissimus dorsi and teres major muscles.

The anterior circumflex is a small vessel, which, springing from the outer side of the artery, passes under the tendons of the coraco-brachialis and biceps muscles, running round the neck of the humerus.

NERVES.

9. The median nerve of the arm. In the lower part of the axilla it lies between the brachial artery and the coraco-brachialis muscle.

The other large nerves of the brachial plexus are concealed from view by the artery and its accompanying veins, which must be pulled asunder if we wish to see them.

10. The nerve of Wrisberg, a small branch from the brachial plexus which lies upon the axillary vein.

11. A branch of communication between the nerve of Wrisberg and the first intercosto-humeral nerve.

12. The first intercosto-humeral nerve.

13. The second intercosto-humeral nerve.

14. }
15. } The middle intercostal cutaneous nerves, branches of the 4th 5th
16. } 6th and 7th intercostal nerves.
17. }

18. The long thoracic nerve, a branch of the brachial plexus, which is distributed to the serratus magnus muscle. It is sometimes called the external respiratory nerve of Bell.

19. The nerve to the subscapularis muscle.

20. The circumflex nerve.

21. The nerve to the latissimus dorsi muscle.

PLATE . VI.

A
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EXPLANATION OF PLATE VI.

SURGICAL DISSECTION OF THE BEND OF THE ELBOW.

*First Dissection of the Bend of the Elbow.**—The arm should be extended and rotated outwards so as to bring the whole of the structures on the fore-part of the elbow-joint clearly into view. (See Plates VI. and VII.) The first incision should be made in a perpendicular direction along the outer border of the limb, commencing about four inches above the elbow-joint, and terminating three inches below it: from each extremity of this incision another cut is to be made at right angles to it, and extended across to the opposite border of the limb. (See Plate VI.) The true skin, which here is very delicate and thin, only should be raised at first, as the superficial vessels and nerves lie in the subjacent cellular membrane (the *superficial fascia*), which must therefore be removed with care so as to preserve them from injury.

A. The skin and part of the superficial fascia dissected from the other structures in front of the elbow, and thrown aside.

B. The fleshy belly of the biceps flexor muscles, covered by the fascia of the arm. *a. a.* The tendinous portion of the biceps muscle underneath the fascia.

C. The fascia of the arm where it covers the brachial artery and median nerve, and separates them from the median basilic vein. The fascia is here greatly strengthened by numerous fibres derived from the tendon of the biceps muscle. The direction of these fibres is downwards and inwards.

D. The fascia of the arm where it covers the flexor muscles of the hand and fore-arm, at their origin from the inner condyle of the humerus.

E. The same fascia covering the supinator radii longus muscle and other extensors of the wrist.

F. The fascia covering the flexor carpi radialis and flexor sublimis muscles.

G. The fascia covering the triceps extensor cubiti.

NERVES.

1. The external cutaneous nerve (Plate VI. fig. 7. and Plate VII. figs. 1. 2. 3. and 4.), after passing between the biceps and brachialis anticus

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* Previously to commencing this dissection, the veins in front of the elbow-joint may be injected with wax or tallow, by means of a pipe inserted into some of the smaller veins on the back of the hand, and at the root of the thumb.

muscles, pierces the fascia of the arm a little above the elbow and underneath the median cephalic vein ; it divides into several branches, which descend as far as the hand and wrist.

2. The internal cutaneous nerve (Plate VI. fig. 1.) pierces the fascia of the arm about a hand's breadth above the elbow, previous to which, however, it divides into two branches, one of which (Plate VI. figs. 2. 3. 4.) crosses the median basilic vein, and is finally distributed to the integuments on the inner and forepart of the arm and hand. The other branch (Plate VI. fig. 5. 6.) is placed nearer to the internal condyle of the humerus, in close apposition with the basilic and ulnar veins ; its filaments extend as far as the inner border of the hand.

3. The external cutaneous branch of the musculo-spiral nerve (Plate VI. fig. 8.) pierces the fascia of the arm on the outer side of the biceps, where it comes into contact with the cephalic vein, and afterwards descends along the external border of the fore-arm, when it terminates in several filaments that supply the integuments as far as the wrist.

VEINS.

b. b. The median veins of the fore-arm. In the subject from which this drawing was taken, there were two veins, whereas in most others only one is found. It terminates superiorly in three branches, viz. ; the median cephalic, the median basilic, and the median communicating vein.

c. The median basilic vein. This vein crosses the brachial artery at the bend of the elbow ; sometimes it runs parallel to the course of that vessel. (See Plate H. I. L.)

d. d. The median cephalic vein, which was double in this subject. The external cutaneous nerve (fig. 7.) pierces the fascia of the arm underneath the commencement of the vein.

e. The communicating vein which, piercing the fascia of the arm, connects the superficial with the deep-seated veins of the fore-arm.

f. The cephalic vein, formed by the junction of the radial veins (fig. *g.*) with the median cephalic vein, fig. *d. d.*

g. The radial vein, ascending on the outer side of the fore-arm, to join with the median cephalic, *d.*

h. The basilic vein, as it ascends on the inner side of the biceps muscle, parallel with the brachial artery, from which it is only separated by the fascia of the arm and some cellular membrane. The internal cutaneous nerve (fig. 1.) lies at first on its inner side. Several lymphatic glands are placed also near it (figs. 9 and 10).

i. i. i. i. i. The anterior ulnar veins, which assist in the formation of the basilic vein by their junction with the median basilic.

k. The posterior ulnar vein.

NERVES.

1. The internal cutaneous nerve, which is seen as it divides into its anterior and posterior branches.

2. 3. 4. The anterior branches of the internal cutaneous nerve, which lie in front of the median basilic vein, and are therefore very liable to be pricked in the operation of venesection performed at the bend of the elbow. In many subjects some of the branches of this nerve pass underneath the median basilic vein.

5. 6. Small branches of the posterior division of the internal cutaneous nerve, descending to the posterior and inner surfaces of the fore-arm.

7. The external cutaneous nerve, which supplies the front and outer aspects of the fore-arm. It pierces the fascia of the fore-arm in front of the elbow, and underneath the median cephalic vein.

8. The external cutaneous branch of the musculo-spiral nerve (nervus cutaneus externus superior descendens), which, piercing the fascia about the middle of the arm, descends as far as the wrist.

ABSORBENT GLANDS AND LYMPHATIC VESSELS.

9. A large gland in front of the internal condyle of the humerus.

10. A smaller gland situated nearer the axilla.

EXPLANATION OF PLATE VII.

SECOND DISSECTION OF THE STRUCTURES IN FRONT OF THE ELBOW-JOINT.

To proceed with the dissection of the muscles, nerves, and blood-vessels of this region, we should divide the fascia of the arm by an incision carried along the inner border of the biceps muscle, and extended for some way over the muscles of the forearm, which take their origin from the internal condyle of the humerus. In doing this, we may preserve, if we choose, the fibrous expansion that is given off from the tendon of the biceps to strengthen the fascia of the forearm, and which serves to separate the brachial artery, in the latter part of its course, from the median basilic vein. On turning aside the fascia, and removing the condensed cellular membrane which forms the sheath of the vessels, we have the view of the parts as they are represented in Plate VII.

A. The internal condyle of the humerus, covered by the fascia of the arm.

B. B. The fascia covering the supinator radii longus muscle.

C. The fascia covering the fleshy belly of the biceps flexor cubiti muscle.

D. The fascia of the forearm, in front of the flexor muscles of the hand.

E. The fascia, covering the triceps extensor muscle.

b. b. b. The fascia of the arm slit open along the inner edge of the biceps muscle, so as to expose the brachial artery and its accompanying veins.

F. The biceps muscle. *c.* Its tendon.

G. The inner edge of the pronator radii teres muscle, partly exposed by reflecting the fascia of the arm.

ARTERIES.

H. H. The brachial artery, before it dips at the bend of the elbow between the muscles from the condyles of the humerus.

I. The artery lying more deeply between the supinator radii longus and pronator radii teres muscles.

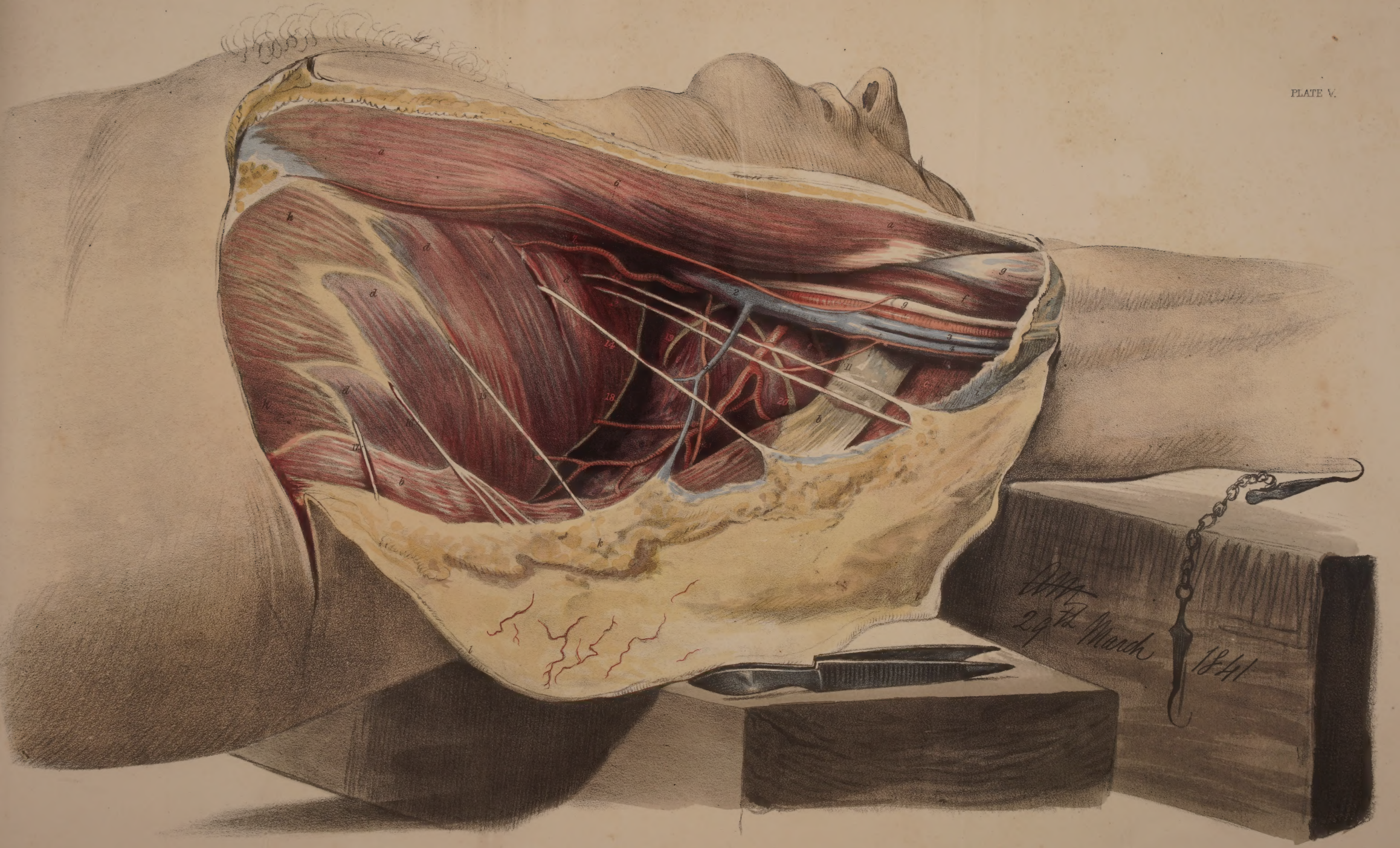
a. a. a. Small arteries given to the biceps muscle.

VEINS.

K. K. The basilic vein.

L. The median basilic vein.

M. The median cephalic vein.



Wm. Fairland litho.

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N. The median vein of the forearm.

O. The communicating branch, connecting the superficial with the deep-seated veins of the forearm.

P. The radial vein.

Q. The cephalic vein.

R. R. } Venæ comites of the brachial artery.
S. S. }

T. U. V. Ulnar veins of the forearm.

W. A vein which comes from the back of the elbow.

NERVES.

1. The external cutaneous nerve.

2. 3. 4. Branches of the same nerve.

5. The internal cutaneous nerve.

6. 7. Branches of the internal cutaneous nerve.

8. 9. Filaments of the internal cutaneous nerve distributed on the front of the forearm.

10. 11. 12. Other filaments of the same nerve which descend on the inner side of the limb.

13. 14. The median nerve, which lies in the sheath of the brachial vessels, and on their inner side.

EXPLANATION OF PLATE VIII.

SURGICAL DISSECTION OF THE RADIAL AND ULNAR ARTERIES AT THE WRIST.

The hand and fore-arm should be extended in the supine position, as they are represented in the engraving. The skin and subjacent adipose membrane are then to be raised from the fascia of the fore-arm, leaving, however, the superficial veins and terminal filaments of the cutaneous nerves of the arm which lie upon it. For this purpose, two incisions should be made across the limb; one about the middle of the fore-arm, and the other over the origins of the small muscles of the thumb and little finger. These incisions should be united by a vertical cut, extending downwards along the outer border of the arm. The flap, when raised, is to be reflected over the ulna. (See Plate VIII. fig. A.)

Numerous veins ramify in the subcutaneous adipose tissue; those on the outer side of the limb take their origin from the small veins at the root of the thumb and forefinger, and ascend to join the radial veins already noticed in the dissection of the bend of the elbow. On the ulnar side they ascend in a similar manner, gradually increasing in size, and contribute to the formation of the ulnar veins of the fore-arm. In the centre they unite and form the median vein. All these veins freely inosculate with one another, and with those which are placed underneath the fascia.

The fascia of the fore-arm is, in this region, dense and firm in its structure. It covers the flexor muscles, and the radial and ulnar arteries. It is attached, on the inner side, to the border of the ulna and pisiform bone; on the outer side, to the styloid process of the radius and to the scaphoid bone; it is continuous inferiorly with the anterior annular ligament and palmar fascia. From its inner surface several processes are detached, which invest the various tendons in front of the wrist. One of these is particularly deserving of attention, as it passes horizontally between the superficial and deep flexor muscles, separating them from each other, and binds down the ulnar artery and nerve as they run alongside the tendon of the flexor carpi ulnaris muscle.

A. The skin and subcutaneous adipose layer raised from the fascia of the fore-arm, and thrown to one side.

B. B. B. Part of the fascia of the fore-arm, covering the flexor muscles of the wrist-joint and fingers.

C. The palmar fascia.

D. The broad flat surface of the lower part of the radius. The radial artery lies upon it, before turning over the external lateral ligament of the wrist-joint to reach the interval between the first and second metacarpal bones. It is easily compressed in this situation.

PLATE . VIII.

June 28 1841

W. Pinelaud. Litho. London. Taylor & Walton. Upper Gower Street. Printed by Pinelaud

E. *f*. The tendon of the supinator radii longus muscle. It lies on the outer side of the radial artery.

F. *g*. The flexor carpi radialis muscle. Its tendon (*g*) is placed along the ulnar side of the radial artery.

G. G. *h*. The palmaris longus muscle. Its tendon (*h*.) is inserted into palmar fascia.

H. H. The fleshy fibres of the flexor carpi ulnaris muscle. *i*. The attachment of its tendon to the pisiform bone. The ulnar artery and nerve lie under cover of the tendon of this muscle.

I. K. *k*. The flexor longus pollicis muscle. K. The fleshy fibres of the muscle. I. *k*. Its tendon.

L. *l*. *l*. The flexor sublimis muscle. L. The fleshy portion of the muscle, supporting (G) the palmaris longus and (F) the flexor carpi radialis. *l*. *l*. Some of its tendons passing under the anterior annular ligament of the wrist, which is marked (*c*, *c*).

M. The tendons of the extensores ossis metacarpi and primi internodii pollicis muscles. They cross over the radial artery, as it turns round the external lateral ligament of the wrist to join the interval between the heads of the abductor muscle of the fore-finger.

N. Origin of the abducens pollicis muscle.

O. Origin of the flexor brevis minimi digiti muscle.

P. The pronator quadratus muscle.

a. The scaphoid bone.

b. The pisiform bone.

c. *c*. The anterior annular ligament of the wrist.

VEINS.

e. *e*. The superficial radial veins of the fore-arm.

ARTERIES.

1. 1. The radial artery, in the lower part of the fore-arm. Its accompanying veins have been removed to show the vessel more distinctly.

In this part of its course the artery is covered by the skin, subcutaneous adipose tissue, and fascia of the fore-arm ; it rests upon, at first, the flexor profundus pollicis and pronator quadratus muscles, and, latterly, the flat surface of the radius. The tendon of the supinator radii longus is on its outer side, and that of the flexor carpi radialis lies internally to it. It is accompanied by two veins. The radial nerve lies at some distance externally.

2. The radial artery turning over the external lateral ligament of the wrist-joint, to join the back of the hand. Here it lies deeply, under cover of the extensor tendons of the thumb (M).

3. The anterior carpal artery, a small branch of the radial, which runs along the lower border of the pronator quadratus muscle, and anastomoses with a similar branch from the ulnar artery.

4. The superficialis volæ artery. This is the principal branch of the radial artery, and is frequently of large size. It passes into the palm of the hand, where it joins with the ulnar artery, forming with it the superficial palmar arch.

5. A small branch of the radial artery distributed to the muscles of the thumb.

6. 6. The ulnar artery in the lower third of the fore-arm.

In this part of its course, the ulnar artery rests upon the flexor profundus digitorum muscle, to which it is bound down by the deep fascia. The tendon of the flexor carpi ulnaris muscle slightly overlaps it. The ulnar nerve (10, 10) lies on its inner side, and it is accompanied by two veins, which were removed in the dissection from which the drawing was made.

7. The ulnar artery where it lies on the anterior annular ligament of the wrist-joint, by the side of the pisiform bone. It is bound down, in this situation, by a very dense and thick fascia.

NERVES.

8. 9. The radial nerve, after it has passed underneath the tendon of the supinator radii longus muscle, in its course to the back of the hand.

10. 10. The ulnar nerve, which lies on the inner side of the artery.

11. The cutaneous branch of the ulnar nerve, which, passing backwards underneath the tendon of the flexor carpi ulnaris muscle, a little above the styloid process of the ulna, is distributed upon the integuments of the little and ring fingers.

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